

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A magnetic recording medium comprising:
 - a recording layer which is formed of a ferromagnetic material;
 - a ferromagnetic atom-rich layer which is formed of a ferromagnetic material having a high ferromagnetic atom concentration as compared with the ferromagnetic material for forming the recording layer; and
 - a lattice spacing-adjusting layer between the recording layer and an underlying substrate; and
 - a non-magnetic layer which exists between the recording layer and the ferromagnetic atom-rich layer;
 - wherein the ferromagnetic atom-rich layer is formed of a cobalt alloy containing more than 64% to not more than 83% of cobalt; ~~and~~
 - ~~wherein an exchange coupling energy of the recording medium at 83% cobalt is about five times the exchange coupling energy at 64% cobalt.~~
2. (Previously Presented) The magnetic recording medium according to claim 1, wherein the cobalt alloy is a CoPt alloy.
3. (Previously Presented) The magnetic recording medium according to claim 1, wherein the cobalt alloy is a CoCr alloy.
4. (Original) The magnetic recording medium according to claim 1, further comprising a magnetization-stabilizing layer which stabilizes magnetization of the recording layer, wherein the ferromagnetic atom-rich layer is positioned between the magnetization-stabilizing layer and the recording layer, and the ferromagnetic atom-rich layer functions as a first enhancing layer which increases exchange coupling between the magnetization-

DESI AVAILABLE COPY

stabilizing layer and the recording layer.

5. (Original) The magnetic recording medium according to claim 4, further comprising a second enhancing layer which increases exchange coupling between the recording layer and the ferromagnetic atom-rich layer, the second enhancing layer being disposed between the recording layer and the non-magnetic layer.

6. (Original) The magnetic recording medium according to claim 4, wherein the recording layer is formed of a material containing Co, Ni, or Fe, and the first enhancing layer is formed of a material containing Co, Ni, or Fe at a concentration higher than a concentration in the recording layer.

7. (Original) The magnetic recording medium according to claim 6, wherein the recording layer contains Boron.

8. (Original) The magnetic recording medium according to claim 4, wherein the enhancing layer has a film thickness of 0.2 to 2 nm.

9. (Original) The magnetic recording medium according to claim 1, wherein the non-magnetic layer is formed of Ru.

10. (Original) The magnetic recording medium according to claim 4, wherein the magnetization-stabilizing layer includes a first magnetization-stabilizing layer and a second magnetization-stabilizing layer, a second non-magnetic layer is provided between the first magnetization-stabilizing layer and the second magnetization-stabilizing layer, and an auxiliary enhancing layer, which increases exchange coupling between the first magnetization-stabilizing layer and the second magnetization-stabilizing layer, is provided at least at one of positions between the first magnetization-stabilizing layer and the second non-magnetic layer and between the second non-magnetic layer and the second magnetization-stabilizing layer.

11. (Original) The magnetic recording medium according to claim 10, wherein the auxiliary enhancing layer includes a first auxiliary enhancing layer which is formed between the first magnetization-stabilizing layer and the second non-magnetic layer, and a second ferromagnetic atom-rich layer which is formed between the second non-magnetic layer and the second magnetization-stabilizing layer.

12. (Original) The magnetic recording medium according to claim 1, further comprising a substrate, a second non-magnetic layer, and a magnetization-stabilizing layer which is positioned therebetween, which is formed of a ferromagnetic material, and which stabilizes magnetization of the recording layer, wherein the ferromagnetic atom-rich layer is positioned on a side opposite to the substrate with respect to the second non-magnetic layer.

13. (Original) The magnetic recording medium according to claim 1, further comprising a substrate, a second non-magnetic layer, and a second ferromagnetic atom-rich layer which is positioned therebetween, wherein the ferromagnetic atom-rich layer is positioned on a side opposite to the substrate with respect to the second non-magnetic layer.

14-23. (Canceled).

24. (Original) The magnetic recording medium according to claim 1, wherein the recording layer has magnetization in an in-plane direction.

25. (Canceled).

26. (Original) The magnetic recording medium according to claim 1, wherein a magnetization curve of the magnetic recording medium with respect to an external magnetic field exhibits a hysteresis loop, a point, at which a rate of change of magnetization with respect to the external magnetic field exhibits a local maximum when the external magnetic field is lowered after magnetization is saturated, exists in a positive area of the external magnetic field, and an exchange coupling magnetic field, which is determined from the magnetization curve, is not less than 1 kOe.

27. (Canceled).

28. (Currently Amended) A magnetic recording medium comprising:

a recording layer which is formed of a ferromagnetic material;

a magnetization-stabilizing layer which is formed of a ferromagnetic material and which stabilizes magnetization of the recording layer;

a non-magnetic layer which exists between the recording layer and the magnetization-stabilizing layer; and

a lattice spacing-adjusting layer between the recording layer and an underlying substrate; and

a ferromagnetic atom-rich layer which exists at least at one of positions between the non-magnetic layer and the recording layer and between the non-magnetic layer and the magnetization-stabilizing layer and which is formed of a ferromagnetic material having a ferromagnetic atom concentration higher than that of the ferromagnetic material for forming the recording layer;

wherein the ferromagnetic atom-rich layer is formed of a cobalt alloy containing more than 64% to not more than 83% of cobalt; and

~~wherein the exchange coupling energy of the recording medium at 83% cobalt is about five times the exchange coupling energy at 64% cobalt.~~

29. (Currently Amended) A magnetic recording apparatus comprising:

a magnetic recording medium;

a magnetic head which is used to record or reproduce information on the magnetic recording medium; and

a lattice spacing adjusting layer between the recording layer and an underlying substrate; and

a driving unit which drives the magnetic recording medium with respect to

BEST AVAILABLE COPY

the magnetic head, wherein the magnetic recording medium comprises:

a recording layer which is formed of a ferromagnetic material;

a ferromagnetic atom-rich layer which is formed of a ferromagnetic material having a high ferromagnetic atom concentration as compared with the ferromagnetic material for forming the recording layer; and

a non-magnetic layer which exists between the recording layer and the ferromagnetic atom-rich layer;

wherein the ferromagnetic atom-rich layer is formed of a cobalt alloy containing more than 64% to not more than 83% of cobalt; and

~~wherein the exchange coupling energy of the recording medium at 83% cobalt is about five times the exchange coupling energy at 64% cobalt.~~

30. (Canceled).

31. (Currently Amended) A magnetic recording apparatus comprising:

a magnetic recording medium;

a magnetic head which is used to record or reproduce information on the magnetic recording medium; and

a lattice spacing-adjusting layer between the recording layer and an underlying substrate; and

a driving unit which drives the magnetic recording medium with respect to the magnetic head, wherein the magnetic recording medium comprises:

a recording layer which is formed of a ferromagnetic material;

a magnetization-stabilizing layer which is formed of a ferromagnetic material and which stabilizes magnetization of the recording layer;

a non-magnetic layer which exists between the recording layer and the magnetization-stabilizing layer; and

USE: AVAILABLE COPY

a ferromagnetic atom-rich layer which exists at least at one of positions between the non-magnetic layer and the recording layer and between the non-magnetic layer and the magnetization-stabilizing layer and which is formed of a ferromagnetic material having a ferromagnetic atom concentration higher than that of the ferromagnetic material for forming the recording layer;

wherein the ferromagnetic atom-rich layer is formed of a cobalt alloy containing more than 64% to not more than 83% of cobalt; and

~~wherein the exchange coupling energy of the recording medium at 83% cobalt is about five times the exchange coupling energy at 64% cobalt.~~

32. (New) The magnetic recording medium of claim 1, wherein an exchange coupling energy of the recording medium at 83% cobalt is about five times the exchange coupling energy at 64% cobalt.

33. (New) The magnetic recording medium of claim 28, wherein an exchange coupling energy of the recording medium at 83% cobalt is about five times the exchange coupling energy at 64% cobalt.

34. (New) The magnetic recording apparatus of claim 29, wherein an exchange coupling energy of the recording medium at 83% cobalt is about five times the exchange coupling energy at 64% cobalt.

35. (New) The magnetic recording apparatus of claim 31, wherein an exchange coupling energy of the recording medium at 83% cobalt is about five times the exchange coupling energy at 64% cobalt.

DESI AVAILABLE COPY